



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------------------|-----------------------------|
| 10/798,146 | 03/11/2004 | Antony K. Spilman | 30030483-02 | 5575 |
| 57299 | 7590 | 08/07/2008 | | |
| Kathy Manke Avago Technologies Limited 4380 Ziegler Road Fort Collins, CO 80525 | | | EXAMINER LIU, LI | |
| | | | ART UNIT 2613 | PAPER NUMBER |
| | | | NOTIFICATION DATE 08/07/2008 | DELIVERY MODE ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

avagoip@system.foundationip.com
kathy.manke@avagotech.com
adrienne.barclay@avagotech.com

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/798,146 | Applicant(s) SPILMAN ET AL. | |
| | Examiner LI LIU | Art Unit 2613 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of species 1 in the reply filed on 06/09/2008 is acknowledged. Claims 12 and 13 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species 2 and 3, there being no allowable generic or linking claim.

Response to Arguments

2. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) in view of the Hiroshima et al (US 5,801,781).

1). With regard to claim 1, Alb et al discloses a rate adaptive system for optical communication networks (Figures 1 and 3-10, column 4, line 20-24, Alb et al discloses that the links between the Central Office CO and the Customer Premises Equipment CPE can be made of optical fiber) comprising:

a plurality of optical transceivers (305, 310, 405 and 410 in Figures 3 and 4, column 4, line 20-24, As the CO and CPE are linked by the optical fiber, the transceivers in the CO and CPE are the optical transceivers) capable of transmitting and receiving signals at a plurality of rates to each other (e.g., Figure 6), and

an optical fiber linked to said transceivers (link 12-14 in Figures 1, 3 and 4, column 4, line 20-24),

wherein said system is configured to cause said transceivers to transmit and receive signals at an initial rate and to adapt said initial rate based upon an error condition (Figures 5-10) responsive to an optical signal parameter (since the optical fiber are used between the CO and the CPE units, the optical signals are transmitted between the CO and CPE units, and the SNR is an optical parameter or OSNR; and other parameters such as amplitude and phase distortion and the error rate are also based on the optical signal, therefore they are optical parameters, column 6, line 12-27) by causing said transceivers to transmit and receive at different rate (column 5 line 33-47, column 13 line 35 to column 18 line 3, and column 19 line 27-35).

But, Alb et al does not expressly state wherein a rate of data being forwarded per unit time is adjusted by inserting invalid data which can be identified and ignored by a downstream process.

However, to change a data rate by inserting invalid data is well known in the art. Hiroshima et al teaches such system and method, wherein a rate of data being forwarded per unit time is adjusted by inserting invalid data (column 12, line 34-39, a invalid packet is inserted to vary the transmission rate; also refer to column 3, line 9-57,

and column 11 line 28-46) which can be identified and ignored by a downstream process (column 12, line 39-46, "it is consequently recognized as an invalid packet from the packet ID and, further, it can be recognized that the payload portion indicates the invalid data by decoding the adaptation field. Thus, the process of the invalid packet is ignored in the decoder").

Hiroshima et al teaches a simple, cost-effective and convenient scheme for adjusting data. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the rate adjusting system by inserting the invalid data as taught by Hiroshima et al to the system of Alb et al so that the data rate can be conveniently and effectively adjusted.

2). With regard to claim 2, Alb et al and Hiroshima et al discloses all of the subject matter as applied to claim 1 above. And Alb et al further disclose wherein said error condition is a failure to synchronize a received signal (Alb et al: column 5 line 33-47, column 13 line 35 to column 18 line 3, the error account and SNR of the received signal can be the results of loss of synchronization; and each received frame has a synchronization field, and the decoders 340 and 440 comprises a synchronization circuitry and the error counting element, the error counting element in the decoder is updated each time an error is detected by the error detector; the value of the error count register is made available to the baseband digital interface, and finally used for changing the respective line rate, column 5 line 33 to column 6 line 62, Figure 5, 6, 9 and 10).

3). With regard to claim 3, Alb et al and Hiroshima et al discloses all of the subject matter as applied to claim 1 above. And Alb et al further discloses wherein said system is further configured to calculate an error coefficient (SNR or BER is calculated, Figures 5-9, column 13 line 35 to column 18 line 3) based on said received signals, and said error condition comprises said error coefficient exceeding a predefined range (Figure 5, threshold is used for adjusting the rate).

4). With regard to claim 9, Alb et al discloses a rate adaptive method for operating an optical communication network (Figures 1 and 3-10, column 4, line 20-24, Alb et al discloses that the links between the Central Office CO and the Customer Premises Equipment CPE can be made of optical fiber) comprising:

transmitting data at an initial rate (Figures 3-9, transmitter 310 and 410 transmit signal at a initial rate, and the BER or SNR is calculated for changing of rate, column 5 line 33-47, column 13 line 35 to column 18 line 3, and column 19 line 27-35),

receiving said data at initial rate (Figures 3-9, receiver 305 and 405 receive signal at a initial rate, and the BER or SNR is calculated for changing of rate, column 5 line 33-47, column 13 line 35 to column 18 line 3, and column 19 line 27-35),

evaluating said data responsive to a parameter observed on an optical signal (since the optical fiber are used between the CO and the CPE units, the optical signals are transmitted between the CO and CPE units, and the SNR is an optical parameter or OSNR; and other parameters such as amplitude and phase distortion and the error rate are also based on the optical signal, therefore they are optical parameters, column 6,

line 12-27) to determine if an error condition exists (Figures 5-9, column 13 line 35 to column 18 line 3, and column 19 line 27-35), and

adapting said rate based upon said evaluation by transmitting and receiving at different rate (Figures 5-9, column 13 line 35 to column 18 line 3, and column 19 line 27-35).

But, Alb et al does not expressly state wherein transmission and receiving comprises inserting invalid data which can be identified and ignored by a downstream process.

However, to change the data rate in transmission and receiving by inserting invalid data is well known in the art. Hiroshima et al teaches such system and method, wherein a rate of data being forwarded per unit time is adjusted by inserting invalid data (column 12, line 34-39, a invalid packet is inserted to vary the transmission rate; also refer to column 3, line 9-57, and column 11 line 28-46) which can be identified and ignored by a downstream process (column 12, line 39-46, "it is consequently recognized as an invalid packet from the packet ID and, further, it can be recognized that the payload portion indicates the invalid data by decoding the adaptation field. Thus, the process of the invalid packet is ignored in the decoder").

Hiroshima et al teaches a simple, cost-effective and convenient scheme for adjusting data. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the rate adjusting method by inserting the invalid data as taught by Hiroshima et al to Alb et al so that the data rate can be conveniently and effectively adjusted.

5. Claims 4, 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) and Hiroshima et al (US 5,801,781) as applied to claims 1 and 9 above, and in further view of Gfeller (US 5,808,760).

Alb et al and Hiroshima et al disclose all of the subject matter as applied to claims 1 and 9 above. Alb et al discloses wherein said initial rate is lowered in response to said error condition (Figures 5-9, column 5 line 33-47, column 13 line 35 to column 18 line 3).

But, Alb et al does not expressly disclose that the initial rate is lowered according to predefined percentages of the initial rate; wherein said percentages are selected from the group of 75, 50, and or 25 percent of said initial rate

However, Gfeller, in the same field of endeavor, discloses a four predetermined rates (10 MBPS, 1 MBPS, 100 KBPS and 10 KBPS in Figure 6, column 10, line 3-9). Gfeller provides an enhanced flexibility in system design and simplification of integration of systems operating with different data rate. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the rate adaptive system taught by Gfeller to the optical communication system of Alb et al so that an enhanced flexibility in system design and simplification of integration of systems operating with different data rate can be obtained.

Although Alb et al and Gfeller don't disclose the specific percentages, such limitations are merely a matter of design choice and would have been obvious in the system of Alb et al and Gfeller. Gefeller discloses a four predetermined rate (10 MBPS, 1 MBPS, 100 KBPS and 10 KBPS in Figure 6, column 10, line 3-9). The limitations in

claims 4, 5 and 10 do not define a patentably distinct invention over that in Alb et al and Gfeller since both the invention as a whole and Alb et al and Gfeller are directed to downshift the rate in predetermined percentages while link failure occurs. Therefore, to downshift by 75, 50 and 25 % or other percentages would have been a matter of obvious design choice to one of ordinary skill in the art.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) and Hiroshima et al (US 5,801,781) as applied to claim 1 above, and in further view of Stener (US 6,690,650) and the applicant admitted prior art (AAPA: Brief Description of Related Development, page 2 line 1-7).

Alb et al and Hiroshima et al disclose all of the subject matter as applied to claim 1 above. But Alb et al does not disclose wherein said initial rate is 10 Gb/s.

However, Stener, in the same field of endeavor, discloses that the initial rate is set to the highest possible rate (the initial rate is set to 100 Mb/s, if link failure, the rate is downshifted to 10 Mb/s, column 5, line 38-59). Although Stener does not expressly disclose a 10 Gb/s initial rate, such rate (10G/s) is widely used in the optical communications, and it is obvious to one skilled in the art to apply the strategy of rate change disclosed by Stener to the 10G/s etc system. As admitted by applicant: "currently there is a vast network of installed optical fiber links of various lengths and bandwidth all of which are capable of handling a variety of transmission rates from a few Gb/s to as high as many 10 of Gb/s. Installing a new network of optical components all capable of operating at a higher transmission rate, for example, 10 Gb/s across the wide installed base of performances, is not economically feasible in today's climate.

Customers are not willing to upgrade these links because they "may" have a low bandwidth fiber" (Brief Description of Related Development, page 2 line 1-7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the initial rate at the highest possible rate (e.g. 10 Gb/s) as taught by Stener and AAPA to the optical communication system of Alb and Hiroshima et al so that a best use of the optical resources can be obtained.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) and Hiroshima et al (US 5,801,781) as applied to claim 1 above, and in further view of Stener (US 6,690,650).

Alb et al and Hiroshima et al disclose all of the subject matter as applied to claim 1 above. But Alb et al does not expressly disclose wherein said system is configured to operate in an optical Ethernet network.

However, Stener discloses a system configured to operate in an optical Ethernet network (Figure 1, column 3, line 1-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the rate-adaptive system to an optical Ethernet network so that a best use of the optical resources can be obtained.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) and Hiroshima et al (US 5,801,781) as applied to claim 1, 9 above, and in further view of Bremer et al (US 6,647,058).

Alb et al and Hiroshima et al disclose all of the subject matter as applied to claim 1 above. But Alb et al does not expressly disclose wherein said system is further configured to notify a network operator in the event of said error condition.

However, Bremer discloses a network management system (58 in Figure 2) used by a technician to target communication links that will benefit the most from power and/or data rate adaptation (column 9, line 43-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the network manager as taught by Bremer et al to the communication system of Alb et al and Hiroshima et al so that rate adaptation can be more efficiently managed, and any fault can be more easily identified.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) and Hiroshima et al (US 5,801,781) and Gfeller (US 5,808,760) as applied to claims 9 and 10 above, and in further view of Bremer et al (US 6,647,058).

Alb et al and Hiroshima et al and Gfeller disclose all of the subject matter as applied to claims 9 and 10 above. But Alb et al does not expressly disclose wherein said system is further configured to notify a network operator in the event of said error condition.

However, Bremer discloses a network management system (58 in Figure 2) used by a technician to target communication links that will benefit the most from power and/or data rate adaptation (column 9, line 43-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the network manager as taught by Bremer et al to

the communication system of Alb et al and Hiroshima et al and Gfeller so that rate adaptation can be more efficiently managed, and any fault can be more easily identified.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kleider et al (US 6,301,265) discloses an adaptive rate system and method for network communications;

Marchetto et al (US 5,914,959 discloses a communication system having an automatically selectable transmission rate;

Chow et al (US 5,479,447);

Hanson (US 4,484,327) discloses to insert invalid data for adjusting rate;

Fushimi et al (US 2001/0029450) discloses to insert invalid data for adjusting rate;

Miyagoshi et al (US 6,549,671) discloses to insert invalid data for adjusting rate;

Matsunaga et al (US 6,504,855) discloses to insert invalid data for adjusting rate.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LI LIU whose telephone number is (571)270-1084. The examiner can normally be reached on Mon-Fri, 8:00 am - 5:30 pm, alternating Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Li Liu
August 1, 2008

/Kenneth N Vanderpuye/
Supervisory Patent
Examiner, Art Unit 2613